UNITED STATES PATENT AND TRADEMARK OFFICE

A

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,939	04/14/2004	John William Krawczyk	2004-0090.02	5281

21972 7590 02/06/2006

LEXMARK INTERNATIONAL, INC.
INTELLECTUAL PROPERTY LAW DEPARTMENT
740 WEST NEW CIRCLE ROAD
BLDG. 082-1
LEXINGTON, KY 40550-0999

EXAMINER
MARTIN, LAURA E

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 02/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/823,939	KRAWCZYK ET AL.	
	Examiner	Art Unit	
	Laura E. Martin	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *4/14/04*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/22/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6, 8-12, and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Teng (US 5087591), Haas et al. (US 5143577), and Lur et al. (US 5482882).

Teng teaches a micro-fluid ejection assembly and a substrate for an inkjet printer heater chip comprising a silicon substrate (figure 2, element 10) having accurately formed fluid paths therein, the fluid paths being formed by etching (column 6, lines 8-10) conducted on a substrate having a surface characteristic before etching selected from the group consisting of a dielectric layer (oxide) thickness of no more than about 5000 Angstroms and between 200 to 5000 Angstroms (column 5, line 31-33).

Teng does not teach a deep reactive ion etching, a substrate having a substantially dielectric material (oxide) free pitted surface wherein a root mean square depth of surface pitting is less than about 500 Angstroms and a maximum surface pitting depth is no more than about 2500 Angstroms, the surface characteristic is adjacent to a fluid openings area of the substrate, and wherein the dielectric layer is selected from the group consisting of silicon oxides, silicon nitrides, silicon carbides, phosphorous spin on glass, and boron doped phosphorous spin on glass.

Haas et al. teaches a deep reactive ion etching (column 3, lines 14-15), a substrate having a substantially dielectric material (oxide) free pitted surface wherein a root mean square depth of surface pitting is less than about 500 Angstroms (column 4, lines 9-13), and the surface characteristic is adjacent to a fluid openings area of the substrate (figure 1B, elements16, 17, and 13').

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the micro-fluid ejection assembly and substrate for an inkjet printer taught by Teng with the disclosure of Haas et a. in order to provide for a higher quality printing apparatus.

Lur et al. teaches a maximum surface pitting depth is no more than about 2500 Angstroms (column 2, lines 57-60) and wherein the dielectric layer is selected from the group consisting of silicon oxides, silicon nitrides, silicon carbides, phosphorous spin on glass, and boron doped phosphorous spin on glass (column 2, lines 57-60).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the micro-fluid ejection assembly and substrate for an inkjet printer taught by Teng with the disclosure of Lur et al. in order to provide for a higher quality printing apparatus.

Claims 7, 13, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Teng (US 5087591), Haas et al. (US 5143577), and Lur et al. (US 5482882) in further view of Matta (US 6183067).

Teng, Haas et al. and Lur et al. disclose a micro-fluid ejection assemblies and substrate for an ink jet printer heater chip; however, none disclose an ink jet printer.

Matta discloses an inkjet printer.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the micro-fluid ejection assemblies and substrate for an inkjet printer disclosed by Teng as modified with the disclosure of Matta et al. in order to provide an inexpensive assembly to eject micro-fluids.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Martin whose telephone number is (571) 272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Laura E. Martin

2/3/06

MANISH S. SHAH
PRIMARY EXAMINER